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PROBLEMS CONFRONTING THE BUILDING AND CONSTRUCTION
INDUSTRY AND ALTERNATIVE SOLUTIONS

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From the development plans that have been prepared, and the models of the economies constructed by P. CLARK, (1) the strategic position of the building and construction industry in the economic development of the East African countries can be clearly seen.

What is required amounts to a tremendous expansion of activity in this sector of the economy, and it is unlikely that this can be easily achieved, if achieved at all. It is thus necessary to investigate the problems confronting the industry and the barriers that exist to increased output and greater efficiency. In the light of this analysis certain solutions may readily present themselves, and yet the scale of the increase may require more radical action.

PLANS & MODELS

In TABLE 1. some of the results derived by P. Clark from the application of his model to the three economies are given, together with in the case of Tanzania and Kenya, figures taken from the plans currently in operation.

From the 'model' estimates it can be seen that in all three countries the building and construction industry is required to become the fastest growing sector in terms of the rate of growth p.a. of gross product. For Uganda, over the period 1962-81, the suggested growth required to meet the overall target of doubling per capita income is 15.7% p.a. For Tanzania (2) the model suggests a figure of 16.7%, whilst the plan itself gives a figure of 12.7%. Whichever is taken, building and construction would be the fastest growing sector. In the case of Kenya there is a greater divergence between the model and plan estimates. The former would again put the industry decisively to the fore of expansion. The plan however, suggests a moderate required rate of growth, which it has been suggested is likely to be an underestimate in view of the rise in the investment rate (3)

In TABLE 2 figures for gross product (4) and construction investment (i.e. turnover) are given. Figures for 1970 have been calculated for Uganda.

The purpose of this table is to show the implications for East Africa as a whole. In talking about building and construction the stress should be on East Africa and not the industry of one country. Capacity, particularly of the larger firms, flows freely over the inter-territorial boundaries in response to the general level of activity in each country.

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- (1) See P. Clark, Development Planning in East Africa 1966.
 (2) The figures for Tanzania have been adjusted to take account of changes in the base year estimates of construction gross product.
 (3) P. Clark Op.Cit. P.132.
 (4) An allowance is made for a rising share of value added.

For example, declining activity in Kenya and Uganda has been partially counteracted by increased activity in Tanzania. But such balancing and transfers will not be possible over the period to 1970 (and beyond) for in each country a substantial expansion is required. Taking 1962 as the base, the required p.a. rate of growth of the East African building and construction industry will be of the order of 13.7% in value added term and 11.7% in terms of turnover.

BUILDING MATERIALS.

Clearly the implications for the building materials industry are as great as for the actual construction and assembly part of the sector. But in addition, account has to be taken of the degree of import substitution of building materials that is implied in the model. By 1970 for Tanzania, 40% import substitution in construction materials is assumed, and 5% for Kenya. For Uganda over the period 1962-80 the figure is 75%.

It would be interesting to have figures for the required expansion of the building materials industry, but these figures are very difficult to arrive at. What does seem to be clear is that the industry is well developed in East Africa. While for Africa generally some 50-60% of materials used are imported, the figures for the East African countries are about 40% - and this was calculated on the basis of total imports, no allowance having been made for inter-territorial transfers.

Given the required expansion in activity in the building and construction sector, and the import substitution constraints, it would seem not unlikely that shortages of certain materials may arise.

LABOUR

The increase in the size of the building and construction industry and the supply of labour are connected in two ways:

First, hopes for the employment situation in urban areas are vested to a large degree in increased opportunities in this sector of activity. Some concern has, however, been expressed at the fall in employment reported in the industry during the 1950's and 1960's. The labour output ratio for Uganda calculated from figures given in the Statistical Abstract, is given below.

TABLE 3.

LABOUR OUTPUT RATIO

1954	1955	1956	1957	1958	1959	1960	1961	1962	1963
3.8	3.0	3.2	2.8	3.0	3.0	2.8	3.2	3.4	2.5

It will be seen that the ratio has over the period 1955-62, fluctuated around 3.0 with no pronounced downward tendency. The figure for 1963 does, however, show a drop to 2.5 - but the significance of this can only be judged from later observations.

3.

Second, as with other sectors of activity, concern should be felt for a labour constraint. This could affect the building and construction industry at two levels. First, and here there have been a number of attempts to undertake manpower studies of this strature of the labour force, highly qualified graduates and professional men are required - architects, quantity surveyors, engineers etc.. Manpower studies have indicated that the demand for people of this educational background, combined with the aims of Africanisation, could produce a not insignificant constraining force on the expansion of the industry. Second, building and construction requires a substantial proportion (1) of skilled-craft trained men in its labour force (bricklayers, plasterers, electricians etc.) and supervisory grades.

Manpower planners have not got the raw material available on which to estimate the future level of demand for labour by type and skill, and thus it can only be suggested at this stage, that it would seem likely that one of the constraints on the expansion of building activity will be supplies of skilled manpower.

The situation appears to be as follows: The building and construction industry of East Africa is required to achieve an unparalleled expansion in output over the plan periods (1962-70, 1962-80). The industry will be required to achieve this with the possibility of shortages of certain materials and of skilled labour.

The implications for the development efforts of these countries, of the problems facing the industry should not be underestimated. Already the shoe is beginning to pinch - specifically in Tanzania.

"One of the main implementation problems which was not fully anticipated, but which became apparent in Tanzania during 1964/5, was the limited capacity of the construction industry to expand the flow of work in progress at the indicated pace" (2).

Furthermore, the SWAI REPORT calculated that the boom in building activity over the period 1964/5 had contributed to raising building costs some 15% in 18 months (3).

Failure on the part of the building and construction industry will create bottlenecks to the development effect, add to the capital costs of the programme as building costs rise - and possibly lead to a decline in the quality of the product.

What should be made quite clear, however, is that this is by no means a novel situation.

"The building industry is expected to become one of the most rapidly expanding industries in the country. At present it has neither the manpower nor the organisation to carry out the programme imminently confronting it".

(1) For building the proportion is about 50%, for construction 20%.

(2) P. Clark P.138 footnote 7.

(3) Periodic Progress Report on the Implementation of the Five Year Development Plan. 'SWAI Report' June 1965.

"The pressing need for the industry to increase output is hampered by the serious shortage of skilled labour"⁽¹⁾.

These passages are taken from a report on the problems of the British building industry, and the position is much the same for the whole of Europe⁽²⁾. It is interesting to reflect, however, that the problem in Britain is to achieve an expansion of output of some 60% over the next twenty years.

This serves to highlight the situation in East Africa, and emphasises the need to consider the ways in which the required expansion in output can be achieved. Not forgetting the different circumstances of the European countries it is suggested that it will be useful to reflect on their experiences in meeting this problem in order to provide the basis for a consideration of what is appropriate under East African conditions.

ALTERNATIVE SOLUTIONS

The pressure of demand on capacity, the shortage of building materials and skilled labour led in the post war period to a great deal of attention being given to the structure and organisation of the industry in an effort to improve its efficiency and increase its output. It was obvious that considerable effort would have to be made so as to produce more in a shorter time, with a reduction, or at least without an increase in costs.

European experience in achieving these ends follows two fairly distinct lines:-

- (a) that the industry as it had traditionally - or spontaneously - evolved, provided great scope for rationalisation and improvement, without substantial changes in the nature of the industry. This may be termed the Western European first line of approach to the problem of efficiency and capacity.
- (b) the alternative, as practised by the Eastern European countries, amounts to a transformation of the industry from its traditional character and organisation, to large scale factory production.

Up to the end of World War II that part of economic activity concerned with the erection, maintenance and demolition of buildings was based on an organisational pattern which had remained substantially unchanged for many generations.

The factors which had a compelling influence on the organisation and structure of the industry were as follows. First, and foremost, demand for buildings tended to be highly fragmented, geographically dispersed with every building being somewhat unique in its design and layout. Second, the only common feature of buildings rested on the properties of the materials from which they were built. The materials were required to be long lasting and resistant to weathering and possessing load bearing, heat and sound insulation properties - and most of all adaptability.

(1) The building Industry ... 1962 onward. A survey by the builder'. P.V.

(2) See: Seminar on changes in the structure of the building industry E.C.E. /HOU/13.

Third, that the whole procedure of building is vast and complex involving economic and physical planning, detailed planning and design of layout, planning and organisation of site work, erection, control and financing. Fourth, that a building incorporates a wide range of materials, products and components of differing origin, quality and degree of precision, which are manufactured and assembled by different trades. Fifth, the buildings are fixed, heavy and bulky.

These factors gave rise to a production process using certain basic materials having proved and desirable features for all buildings. Work on the site took the form of a handicraft process with particular trades and craftsmen adapting these materials to the specific requirements of the job in hand. The industry, mainly because of the nature of demand, was characterised by small firms of general builders employing handicraft processes and traditional skills. Since building themselves cannot be moved production was split into manufacturing and assembly - the builders were required to be mobile, and the only stationary part of the industry was the geographically dispersed centres supplying the basic materials. Furthermore, because of the complexity and technicality inherent in the building process, and the uniqueness of every project, highly specialised talents were required which grouped themselves by profession and claimed authority over only part of the territory.

Thus the structure and organisation of the traditional industry was characterised by a tripartite division between client, design team and production process. The three were essentially independent - more significantly the division between design and production.

The production process itself was divided into three sections: the industrial production of building materials, largely independent of construction proper, even if influenced by its requirements (bricks, sand, gravel, cement, steel); the industrial production of components covering a small proportion of the work (windows, doors, sanitary equipment); the production of the actual building on site.

The bulk of the work was concentrated in the latter phase, where it was executed by labour intensive methods, employing a high proportion of skilled craft labour. But in view of the fragmented and unique nature of demand the technique of production could best be described as empirical. The industry operated like a bespoke tailor adapting the materials of stage one to the needs of site and client. As a result firms tended to be small, employing a high proportion of specifically skilled labour, with the production process ill organised and long winded.

The design stage was divided into specialisms based on professional codes of conduct, with the architect nominally in charge. Design and production were utterly divorced to a degree namely found in other industries, and this was emphasised by competitive tendering procedures.

Though the shortcomings, in terms of productivity and efficiency, of what has been described can be clearly seen, the traditional industry was found to operate satisfactorily in the conditions pre-war, when demand was stable and the supply of labour abundant. The war changed this state of affair in Europe bringing pressure of demand, and shortages of skilled labour and traditional materials.

In certain countries faced with these problems, the aim was to re-establish the old order after the disruption of war, and from then on to reorganise the industry, improve its overall efficiency and train more workers in traditional skills. It was subsequently realised that there was a limit to what could be achieved within the traditional framework, and efforts were turned to the introduction of new skills, methods, materials and organisation, thus speeding up the the technical and organisational evolution of the traditional industry.

In Eastern Europe the scale of the problems left by the war were much greater, and resulted in an early departure from traditional methods. Concrete became the main building material, and the increase of cement production and the unifying of demand contributed to the creation and rapid expansion of a new sector of the industry entirely devoted to the prefabrication of large concrete elements. Many of the initial solutions proved subsequently to be uneconomic as the traditional sector of the industry improved its efficiency through the greater use of prefabricated components, better organisation, greater mechanisation and a higher degree of specialisation (the line of approach the Western European countries relied on).

But the prefabrication section of the industry has not stood still, and is in fact gaining wider acceptance. In place of the initial 'closed' system of prefabrication where design, fabrication, transport and assembly was geared to a single end (e.g. a specifically designed house), the 'open' approach is increasingly used based on the production, on an industrial basis, of increasingly complex components and elements which are capable of being assembled in a wide variety of combinations.

Thus the European building industry provides a full range of alternative solutions to the problem of the demand materials skill situation. Each of these solutions can be characterised as a process of industrialisation i.e. the increased application of industrial processes and features of industrialisation to the original traditional industry that was characterised by an empirical production process based on handicraft skills and the moulding of 'global materials' to each specific situation.

Each method is designed to bring increased productivity and efficiency and to increase the speed of building so raising output and capacity. Which solution is appropriate and economic depends on the particular circumstances of the country considered - but it may well be that the problem is such as to warrant a technical, as opposed to economic solution in the short run.

TRADITIONAL INDUSTRY

The rationalisation of the traditional industry takes a number of forms grouped under the heading of the industrialisation of the building process. The aim is to replace the empirical handicraft nature of the industry by acting on those factors standing the way of technical, organisational and economic efficiency.

Most of the changes are of an organisational nature others relate to mechanisation, and to the nature and supply of building materials. Below a brief outline of some of these methods is given.

BUILDING TEAM. The team is composed of several independent economic units, each specialised in a particular branch, and with the whole team related specifically to the life and duration of a single project. This situation has been described as one of "interdependent autonomy" involving a division between technical interdependence and organisational independence.

This sets a condition to the efficient organisation of the industry, and changes need to be considered designed to achieve a better product, better utilisation of resources, techniques, skills and machinery, and to accelerate the development process. A characteristic feature of the team is the late appointment of the contractor, but the evolution of new methods and the execution of design such as to achieve maximum efficiency in site operations demands closer contact between the stages.

There is a need to get away from traditional relations based on mutual control towards integration and collaboration.

DEVELOPMENT PROCESS. The process whereby changes are introduced in the functional properties of a product its structural principles, and in the technology of its production.

Generally the technical evolution of the industry has been poor, a fact closely associated with the nature of the building team. But not only is close collaboration required - the team needs to be presented with a programme of demand for a single type of building so that it can arrive at a single solution in terms of that programme, and in order that the cost of research and development can be borne. The group needs authority to be able to set up standards applicable in all subsequent building work, and freedom from current building regulations which frequently preserve the old and exclude the new (1).

(1) Plans exist in Uganda for a revision of the 1951 Building Code.

NEW MATERIALS AND METHODS. Much has already been done to improve traditional materials and methods of construction.

An example concerns the evolution of the brick, induced by the need for a light, modern, fast and more economic type of construction. A result has been the introduction of standard sizes, hollow bricks (with same load bearing properties - but much lighter), multiple sizes (1) (so economising on joints, and therefore mortar and bricklaying), brick panels, facing bricks to replace plastering, and delivery in palettes.

The effectiveness of concrete and reinforced concrete has increased as a result of developments in both cement and steel technology e.g. accelerated setting of concrete.

Thus building materials are being used more intensively and new materials are coming into use. As a result, the building industry can produce more with the labour available and without great changes in equipment. Further, new site methods are having important effects - load bearing cross-walls from heavy concrete poured in detachable shuttering so that wall thickness is reduced by some 50% as compared with traditional brick walls.

STANDARDISATION AND TYPIFICATION. Standardisation serves to rationalise the nature of demand by replacing the vast range of designs arising from spontaneous demand, with a single product. This helps to bring about a higher volume of construction by promoting continuity of demand and repetition which saves building time.

Wide use of type designs makes it possible in association with client and builders, to evolve a building which is at a functional and technical optimum - and at the same time save design resources.

Standardisation and typification are necessary if building is to be turned into an industrial process, and as such it does not necessarily involve great changes in the nature of the industry. But it does require certain preconditions - the organisation of a building programme within which the design may be rationalised; agreement among all sections of the team on new design and variety reduction of components; sufficient freedom from regulations to promote innovation; and tendering procedures permitting closer cooperation.

CONTINUITY OF PRODUCTION. The traditional industry is characterised by general builders who move from one job to another - each job (houses, hospital, school) is undertaken by itself and the next may be quite unrelated to the first.

(1) Have the example in Uganda of the interlocking block, three times the size of a normal brick, and cheaper.

A desirable organisational feature of the industry would be to relate conditions for greater specialisation by building firms in different branches of industry. Advantages would result as a contractor gained a deeper insight into the organisational and technical problems of the particular product, and were given time and scope to adapt their methods to accommodate this.

But the general contractor emerges in response to the fragmented nature of demand, and without changes in the way demand is organised specialisation cannot easily be achieved. Through government and local authorities organising programmes of housebuilding (etc) and letting contracts to a particular contractor, or amongst specified group of contractors, many advantages should emerge in terms of speed and efficiency.

Furthermore, technical continuity can be extended by a reduction in the number of models (houses, schools etc.) through standardisation and typification.

Thus there is a need to create the conditions whereby the building industry is able to adapt itself and invest in and organise new methods and techniques. Continuity of demand is without a doubt a condition of the industrialisation of building activity. But full employment of the sector will not create this alone - it requires organisation by the largest clients.

ON - SITE.

The full advantage of continuity of demand depends on the degree of organisation achieved on the site. Having provided the contractors with the opportunity to specialise on a particular product over a sufficiently long period of time, it is up to him to organise the work in a rational way. By the use of the continuous flow line method specialised teams are created who perform specific functions on each house, moving from house to house, and one site to another in a logical sequence, achieving a high level of efficiency.

But clearly, the greater the variety of design, components and materials, the more difficult it will be to **achieve continuity.**

Other aspects of site organisation include managerial methods of work planning, efficient site layout, and the use of incentive schemes. To achieve a reduction in construction time, labour and overall costs, the industry requires no special equipment, but it does require more planning.

SITE TO FACTORY. A feature of the industrialisation process is the transfer of work from site to factory. The first and obvious approach is to standardise the building components - doors, windows, sanitary equipment. Most of the developments take this form - building with a greater proportion of factory made components to which efficient production techniques may be applied. This replaces much of the slow handicraft tailoring that used to proceed on site, reduces the need for skilled craftsmen and speeds building.

MECHANISATION. Great strides have been made in the European building industry to mechanise the process of production on site. This covers a number of operations transport and handling of materials, moving of earth, mixing of concrete, plastering etc..

The economic application of mechanical means requires, however, continuous production in order to maximise the utilisation of the machinery - and investigations have shown that generally very low levels of utilisation are attained.

It should be clearly borne in mind that the mechanisation of building usually displaces unskilled labour, and leads to an increase in the demand for mechanics.

Generally speaking, slow progress has been made in the building industry towards higher efficiency. It is not easy to move beyond traditional construction since the concept of the product has been determined by techniques readily at hand.

It has, however, been found that the traditional system of building if suitably rationalised, can continue to play an important role in the satisfaction of an increasing demand. The methods outlined above have been shown to improve the performance of the industry; their advantages can be summed up as a reduction in the need for skills, especially on site, a shortening of construction time and a reduction in costs.

The method of construction is not all important - what is, however, is the manner in which the work is planned, prepared, organised and executed. But in order to achieve this, certain conditions need to be met:

- sufficient continuity in demand, and larger contracts.
- agreement on variety reduction in buildings, and in the range of size of components produced - either within a programme or through a system of modular co-ordination.
- freedom of manoeuvre from restrictive building regulations.
- the adoption of tendering and contract procedures which allow the professional and contract sides of the industry to work more closely over longer periods.
- the improvement of management and site organisation.
- collaboration of all parties in the building team, to take joint decisions on requirements, design, cost and production.

This can be summed up as the need for the client to finance organised, continuous production; for the designer to move from individual projects to type designs, and to design with close attention to production; the builder to move from improvisation to organisation and specialisation; and the manufacturer to abandon odd production ranges and sizes, and to develop dimensional standardisation and co-ordination.

PREFABRICATION.

As has already been pointed out, some countries in Europe confronted with the problems of demand - skills materials, adopted an approach to the building and construction industry substantially different from that outlined above. This amounted to the creation of a new industry based on prefabricated elements.

This method of production involves the shifting of work from site to factory. In the factory, in addition to the production of secondary components (doors, windows etc.), heavy large scale components (walls, floors, roofs, prestressed concrete pillars) are produced. The process on site becomes one of the assembly of these components into the finished building.

This development is based on either the typification of particular buildings for which the components are specifically designed and produced (closed) or the introduction of a system of modular coordination whereby components can be assembled into a wide variety of buildings (open).

Through the employment of these systems of building substantial reductions in the time required to complete construction have been recorded. Furthermore costs have been reduced somewhat and savings in traditional skills, and skilled labour generally, recorded.

On the other hand, consideration must be given to the amount of investment required in plant and equipment both on site and in the factory. Investigation of this problem in U.K., however, has indicated that the capital required in a prefabrication plant is not substantially greater than that required under traditional methods, and furthermore the utilisation of the capital invested is significantly greater.

In addition to the question of capital requirement attention must also be given to the problem of transporting these components from site to factory, and the scale of operation necessary to make the operation economic.

But there is no clear cut statement regarding the economics of prefabricated building.

"Advantages of industrialised house construction, particularly of large size components produced in prefabrication yards, are so evident that the only question is that of ascertaining which of the methods are the most appropriate in present conditions" (1).

(1) E.C.E. HOU/13 P.55

" The advantages of large panel house building are quite obvious; provided the work is organised rationally, prefabricated large panel houses are considerably cheaper, consume less labour in production and building... and are much quicker to erect. Capital investment needed for the organisation of large panel house building is substantially less compared with that for the organisation of enterprises for traditional building" (1).

On the other hand,

"..... industrialised methods are economic only in certain conditions and some time will necessarily elapse before such conditions prevail in all parts of the world". (2)

"Industrialisation in the form of prefabrication becomes a necessity only when circumstances rule out the use of other methods; the technical and economic conditions required for prefabrication must, of course, be met in the area concerned". (3)

From what is claimed for the system of prefabrication it is understandable why there exists a certain amount of interest in East Africa in these methods. In the main, though not entirely, this interest originates from overseas manufacturers considering the establishment of plants for the production of prefabricated houses in East Africa. As far as Uganda is concerned this interest has never reached the stage of a feasibility study. For this reason and because of the interest being shown, it is proposed to study how appropriate this method is under East African conditions to the solution of the industry's problems.

CONCLUSION.

The Development Plans and models of the three East African economies show quite clearly the important part that the building and construction industry is called upon to take in the development of these economies.

But such is the magnitude of the requirement, that one is left doubting if the industry can in fact achieve the required expansion in output. Failure to do so will clearly jeopardise the success of the Plans for only to a limited extent can building and construction be regarded as an alternative form of industrial expansion - and only then at the expense of sacrificing urgent urban housing needs. Generally building and construction is complementary to the expansion of other spheres of economic activity. (4)

In addition the industry is likely to be working within certain constraints, specifically supplies of materials and of skilled labour.

(1) E.C.E. HOU/13 P.239

(2) E.C.E. HOU/13 P.230

(3) E.C.E./HOU/13 P.232

(4) For a contrary view see P. Clark op.cit P.84 and B. Van Arkadie 'Structure of the Kenya Economy' EDRP. 13

But this situation is not novel - many countries have been faced (and still are) with the problem of how to increase the efficiency and capacity of the building and construction industry.

Different solutions have been applied in different circumstances, but what stands out most clearly is the scope for the rationalisation of the industry. In Europe the industry has lagged behind other sectors of activity in terms of efficiency. But the complexity of the industry-which accounts in part for its past performance - also suggests a wide range of measures which are applicable to its improvement.

The problem is the same in East Africa, and it is unlikely that the scope for improvement is any less. It remains, however, to determine the form of the change appropriate to the situation. For example, should the Western European approach be followed of rationalising the traditional industry, or the Eastern European approach which amounts to a transformation of the industry?

This question can be answered only after a comprehensive survey of the present organisation, structure and characteristics of the industry in all its parts - from the nature and organisation of demand, down to the individual building firms and building materials suppliers. What is required is a survey of the existing situation, and at the same time an investigation of the problems which the industry claims confronts it in its efforts to increase output and efficiency.

Thus what is proposed is to undertake an enquiry into the problems of the building and construction industry having special regard to the hinderences to rational and cheap production, or the means to achieve this, and the scope and measures for achieving improvements, both on the site and elsewhere in the complex of activity.

TABLE 1

BUILDING AND CONSTRUCTION - MODELS AND PLANSUGANDA

	<u>1962</u>	<u>1981</u>	<u>ANNUAL R/G</u>
	£m.	£m.	+ %
AGRIC. PRODUCT	49.9	170.5	6.7
URBAN "	52.6	263.2	8.9
MANUF. "	8.6	57.7	10.6
SERVICES "	22.8	114.7	8.9
GOVERN. "	13.4	59.9	8.1
TRANSP. "	7.8	31.9	7.7
CONSTRUCTION "	3.9	51.0	15.7

KENYA

	<u>MODEL PROJ.</u>		<u>PLAN PROJ.</u>	<u>ANNUAL R/G</u>	
	<u>1962</u>	<u>1970</u>	<u>1970</u>	<u>MODEL</u>	<u>PLAN</u>
	£m.	£m.	£m.	+ %	+ %
AGRIC. PRODUCT	39.9	64.2	66.8	6.1	6.8
URBAN "	134.2	221.1	204.0	6.5	5.5
MANUF. "	23.9	44.4	35.9	8.1	5.2
SERVICES "	56.7	90.1	85.2	6.0	5.2
GOVERN. "	28.1	43.6	39.8	5.6	4.5
TRANSP. "	25.6	42.9	43.1	6.6	6.9
CONSTRUCTION "	6.8	15.7	10.0	11.0	5.0

TANZANIA

	<u>MODEL PROJ.</u>		<u>PLAN PROJ.</u>	<u>ANNUAL R/G</u>	
	<u>1962</u>	<u>1970</u>	<u>1970</u>	<u>MODEL</u>	<u>PLAN</u>
	£m.	£m.	£m.	+ %	+ %
AGRIC. PRODUCT	48.5	94.6	86.5	7.7	7.3
URBAN "	68.2	155.2	154.8	9.6	8.8
MANUF. "	15.4	46.6	a	13.1	11.1
SERVICES "	18.4	42.0	a	9.6	8.4
GOVERN. "	17.3	32.6	a	7.3	8.0
TRANSP. "	15.7	31.0	a	7.9	8.5
CONSTRUCTION "	6.1	24.6	a	16.7	12.7

(a) See P. Clark op.cit. P.117

Source: P. Clark, Development Planning in East Africa.

TABLE 2

	<u>1954</u>	<u>1955</u>	<u>1956</u>	<u>1957</u>	<u>1958</u>	<u>1959</u>	<u>1960</u>	<u>1961</u>	<u>1962</u>	<u>1963</u>	<u>1964..1970</u>	
<u>CONSTRUCTION GROSS PRODUCT (£m.)</u>												
UGANDA	3.9	4.3	5.4	3.9	4.2	3.8	3.8	3.5	3.9	3.5	3.5	12.5
KENYA	6.3	8.0	9.3	9.6	8.4	7.9	7.9	7.8	6.8	4.9	4.3	15.7
TANZANIA ⁽¹⁾	6.2	3.7	4.8	5.4	6.1	5.6	6.4	8.4	8.0			
									<u>6.1</u>	<u>6.4</u>	<u>7.5</u>	<u>24.6</u>
									<u>16.7</u>	<u>14.7</u>	<u>15.6</u>	<u>52.8</u>
<u>CONSTRUCTION INVESTMENT (£m.)</u>												
UGANDA	12.1	13.4	11.7	12.6	12.1	10.6	10.3	8.9	8.5	10.3	11.2	24.9
KENYA	20.7	24.1	25.9	27.3	24.3	24.5	23.1	18.1	18.5	14.3	15.3	40.7
TANZANIA	11.2	11.4	12.3	12.8	12.5	11.4	11.9	14.6	15.5	15.6	19.2	49.7
	<u>44.0</u>	<u>48.9</u>	<u>49.9</u>	<u>52.7</u>	<u>48.9</u>	<u>46.5</u>	<u>45.3</u>	<u>41.6</u>	<u>42.5</u>	<u>40.2</u>	<u>45.7</u>	<u>115.3</u>

(1) Series of gross product revised in 1962, due to re-classification.

Source: P. Clark, Development Planning in East Africa.

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