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**THE PROBABLE EFFECTS OF THE VOLTA RIVER
PROJECT ON URBANIZATION IN GHANA**

prepared for the Economic Commission for Africa

by

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ON URBANIZATION IN GHANA

INTRODUCTION

This paper* is a study of the probable effects that the proposals of the Volta River Project may have on the existing pattern and processes of Urbanization in Ghana.

The method adopted in this study has been to make broad observations on the past and present changes and developments within the existing set of conditions in the urban picture. A direction of trend is determined, and the result used as a measuring rod in indicating the probable future effects that the Volta River Project may produce under the same set of conditions, and under the new conditions likely to be created by it. These effects are viewed in the light of the rapidly changing economy of the country, and against a background of the social, political, and traditional set-up of the people.

The study is therefore projectional in parts, and contains elements of relativity in its analysis.

The method of deduction is applied on the whole. In the detail analysis, however, different methods are applied but in the final processing, they are all co-ordinated into a composite picture with a common basis.

Throughout the study, the aim has been to consider the various factors affecting urbanization in the light of, and in relation to the components of the Volta River Project.

What then is the Volta River Project? The Volta River Project** is a proposal for the joint development of the harnessing of hydro-electric power from the River Volta, and of the mining of large deposits of bauxite, the ore from which aluminium is manufactured. Linked up with these main projects are other ancillary works such as the construction of new railways and roads, and the building of new townships and a port.

* The views expressed in the present paper are those of the author and not necessarily those of the ECA.

** All figures and statistics of this paper are based on The Report of the Preparatory Commission on the Volta River Project, Vol. 1, 2, 3.

There are FIVE main components of the project:-

(1) The Bauxite Mines and Mining Village:

Deposits of bauxite known to total over 200 million tons lying for the most part about 35 miles north-west of Kumasi (in the hills between Aya and Yenahim), represent about 45 million tons of aluminium. The relative nearness of the bauxite mines to the smelter, only 200 miles away gives it an economic advantage over many similar industries in other parts of the world.

The relative nearness of the mines and the smelter town to some of the main urban town (such as Kumasi and Koforidua) creates physical relationships between them through the development of accessibility - rail and road. The estimated life of the mines is at least 200 years on present plans. A mining village in the vicinity of the deposits is envisaged to house the workers and their families. The village is bound to depend on Kumasi, the nearest urban area, for its major social and other essential services.

(2) The Railways:

The railways to carry the bauxite from the mine to the smelter, and the aluminium from the smelter to the coast (Tema) for export. The plan also envisages the extension of existing railway network, some stretches of which have already been completed. In addition, there would be the operation of up to six bauxite trains every day.

Apart from the opportunities of employment, this development could alter the landscape, and also have an impact on settlement patterns and settlement distribution. There will be roads to open up the construction areas and the villages which supply food and produce to the urban areas. This should assist internal trade and traffic flow of goods and services.

(3) The Dam and the Power Station:

During the seven years constructional periods of the dam and the power station, it is estimated that about 5,000 workers will be employed. The dam will create a lake about 3,000 sq. miles in area, and 250 miles long, stretching from the dam back into Northern Ghana. This would enable half a million kilowatts of electricity to be generated, which will be equivalent to about 100% of the present output.

(4) The Smelter:

The smelter, sited on the plains near Kpong, about 88 miles by road from Accra, will employ thousands of workers during the constructional stages. At full production, it will be, apart from the Government, the largest simple employer of labour 9,000 men. The aluminium in time could earn as much for Ghana as all its present export put together.

(5) The Port of Tema:

The port of Tema is sited about 17 miles east of Accra. The main reasons for the construction of this port are:-

- (a) to handle the imports of raw materials for the project
- (b) to handle the export of aluminium from the smelter
- (c) to provide a second deep water harbour and to relieve Takoradi harbour (the only one in the country) of some of its load it cannot handle due to increase in export and import trade.

Apart from the port facilities, a new Town of Tema, already in existence, is intended to house the workers and their families. The development of both the port and the town is proceeding as part of ordinary development. Due to its nearness to Accra, Tema is having an impact on Accra, and vice versa, as far as physical, economic and social inter-relationships are concerned.

URBANIZATION IN GHANA(i) The Urban Scene:

Urbanization in Ghana is comparatively recent, and restricted in scale, scope and character. For the purposes of this study, urban areas could be conveniently classified into two groups:-

- (a) 20,000 - 50,000 population
- (b) 50,000 - and above population

Accra, Kumasi and Sekondi-Takoradi fall under the second groups, and they are the only major urban areas in the country.

POPULATION GROWTH OF SOME URBAN AREAS

Town	1931 Census	1948 Census	1960 Census
Accra	70,000	135,926	337,828
Kumasi	35,829	59,420	180,642
Sekondi/Takoradi	22,431	44,557	75,450
Cape Coast	17,685	23,346	41,230
Koforidua	10,529	17,806	34,856
Tamale	12,941	16,164	40,443
Obuasi	7,598	15,876	22,818
Winnebah	10,926	15,171	25,376
Nsawam	-	11,178	20,240

Tema Town has a population of 14,937, and Tema New Village 7,662 as at 20th March 1960.

It is evident from the above table that the trend shows a tremendous increase, and that the urban towns in Ghana are expanding rapidly. The problems of each particular town are different and peculiar to itself, depending, of course upon various factors and forces. Generally, lack of improvement in social conditions has been accompanied, paradoxically, by a rise in per capita national income, as follows:-

<u>Year</u>	<u>Per Capita Income</u>
1955	£G 61
1956	£G 65
1957	£G 65
1958	£G 67
1959	£G 75
1960	£G 77

This increase has accompanied industrial expansion.

Some of the factors that have conditioned the growth and process of urbanization in Ghana are:-

- (a) Population concentrations and Migration
- (b) Status of the town e.g. regional and administration capitals
- (c) External trade and general economic activities
- (d) Transport and Communications.

Functionally, the urban area serves both internal and external purposes, covering a considerable wide range of sphere of influence ranging from 10-30 miles in places. Thus the urban areas, and more particularly their central areas, serve populations considerably greater than those residing in the town themselves. In the words of Christaller therefore, "it is a place with central functions towards its market area."

The urban communities consist essentially of a multiplicity of diverse social and cultural groups, with greater numbers depending on wage-earning labour, and others on petty trading. According to a survey carried out at Accra, 8 out of every 10 women engage in petty trading or retail market. The populations have grown rapidly by continuous, but often temporary, migration from both neighbouring and distant areas. Among the short distance migrants, the desire is a quest for wage-earning employment and a subsequent permanent residence in the urban community. Within the ranks of the northern migrants, urban life is not the ultimate aim. The aim is to make a limited monetary income and then return to their tribal areas.

Europeans are engineers, professional men and technicians. The Indian, Lebanese and Asian communities are mainly commercial men owning stores and transport undertakings. Among the Ghanaians, the diversity ranges from market traders, skilled and unskilled artisans, petty traders, and an emergence of a large influx of professional men.

During the first week of January, 1962, the author undertook a survey of the "Shop Population" in the Central Area of Takoradi, and the following figures were obtained:-

No. of shops owned by Ghanaians	178
No. of shops owned by Non-Ghanaians	<u>200</u>
Total	<u>378</u>

About 80% of the Non-Ghanaians - owned shops were for either Syrians, Lebanese or Indians. And the 20% for Europeans and Nigerians.

(ii) The Urban Problems:

The urban scene has its problems, and the main ones, particularly noticeable in Accra, Kumasi and Takoradi, are likely to be affected by the Volta River Project. These are:

- (a) Population increase due not only to fertility and natural increase, but mainly to migration. Many thousands of workers each year come to the southern Ghana from the north and the surrounding French

territories. It is estimated by the Government Statistician that these migrant workers constitute about 30% - 40% of the total wage-earning labour force in the urban areas; about 45% of the constructional labour force; and up to 60% of the employed population in the mining industries of Tarkwa, Prestea and Obuasi. The wave of migration has proceeded at a rate varying between 4% population increase per year and 8% over the past 10 years. This has caused an increase in over-crowding in some areas. The limited amount of rentable accommodation has also caused a significant increase in unauthorized building in all the large towns, except Kumasi where land tenure and estate management is well controlled. Generally, therefore, there is a lowering of social conditions; labour structures are unstable; labour supply is unreliable; and acute problems created in housing and town planning.

- (b) Subsistence agriculture is becoming less attractive to farmers who now prefer wage-economy, and are therefore drifting into the urban areas. It is hoped that the present policy of the Government which is aimed at mechanization and co-operative farms, should help in arresting the problem.
- (c) Sociologically, a major problem is created by the impact of a major industry on a society which is mainly agricultural in character and peasant in outlook, and where large scale manufacture is unfamiliar.
- (d) It is generally accepted that in the urban communities, there is a process of change at work. A pattern resembling that of the family unit of contemporary European life is beginning to emerge, but the exact nature and pace of transition is still largely a matter of speculation. The pattern that would emerge in the new Volta Project communities (drawn as they could be from various parts of the country), and the pattern that might develop in nearby existing urban communities affected by the impact of the new employment, would clearly be of great relevance in planning houses and formulating new concepts in all features of town planning.

With this background to the Volta River Project, as well as a picture of the urban scene and its attendant problems, the effects of the Project on Urbanization will now be examined in detail under the following headings:-

- (a) Social Aspect
- (b) Economic Aspect
- (c) Landuse Implications

The Social Aspect:

A high proportion of the unskilled labour seeking employment is migrant and seasonal. Some come from long distances, and others short distances, but a majority of them come to southern Ghana from the North during the dry season and return to their villages in time to prepare their farms before the commencement of the rainy season. Migrant labour is employed in all industries, and the following figures give an indication of their dispersal:-

- 60% in Mining Industries
- 45% in Constructional Works
- 40% in wage-earning labour force in the urban areas.

Since their object in travelling south is normally to obtain money or goods to take home with them, they tend to concentrate in the main industrial and urban areas where work is plentiful, wages high, and imported goods available in many stores. On the one hand, this situation results in the creation of a floating population of unskilled workers without any regular employment. On the other hand, the urban areas offer training grounds and opportunities for both skilled, semi-skilled and technicians.

During the second half of 1961, unemployment figures for Sekondi/Takoradi (population 75,450 1960 census) were as follows:-

Month	Skilled Labour	Unskilled Labour
July	459	2,387
August	486	2,131
September	481	2,133
October	390	2,076
November	538	1,975
December	631	1,978
Total	2,985	12,680

Available figures for the same period for the towns of Kumasi and Accra could not be obtained.

Since the Project is sited within easy reach of the large urban centres of Accra and Kumasi, it is inevitable that a great proportion of the 40% skilled and semi-skilled manpower needed during the constructional stages would be drawn from the urban areas of the south who happen to have already the necessary skill required. This situation has already arisen. The Ghana Railways have already effected wholesale transfers of skilled and professional officers particularly from the Ports and Marine Departments, and a number from the Traffic Division to Tema. These transfers have not as yet had any serious repercussions on the man-power position at the headquarters in Takoradi. There is also a striking evidence of a wave of labour force trickling into Tema for employment particularly from the surrounding rural areas in Accra and the Eastern Region. A number of foreign labour, particularly from Liberia, who are notable stevedores have also moved to Tema area from Takoradi. This situation could result in an occupational - group-gap being created in the urban areas, especially during the constructional stages of the Project. The Report of the Commission on the Volta River Project estimates that during the construction phase, the total labour force would increase gradually to a peak of about 15,000 in the sixth year on the smelter alone, and then decline to 4,000 needed subsequently for the operation of the first stage of aluminium production. Apart from the problems of redundancy that might arise, there is also the problem of housing the 15,000 workers on temporary sites and in temporary buildings, and later rehousing the 4,000 permanent workers in permanent buildings on permanent sites. This further raises the problem of the type and kind of temporary housing to be provided. Should the houses be of mud, or timber, or aluminium structures? If prefabricated houses are imported what will be their comparative costs as compared with locally produced prefabs? Whatever the answers may be, the results are bound to have an impact on the existing urban scene. Also, the new urban of Tema and the Smelter would be nothing but overflow receptacles for unskilled floating population from the old urban areas.

The vacuum thus created in the old urban areas is likely to be filled more by rural populations than by populations from other urban areas. This trend of migration in this direction has been confirmed and proved by social surveys carried out in Accra and Takoradi. This tendency creates large agglomerations of multi-tribal, multi-lingual and multi-racial groups in the urban areas. A number of social effects could result from the creation of such a heterogeneous, largely unskilled and illiterate wage-earning population.

The effects of migration on the urban social structure will now be examined with a view to assessing their impact on the Volta Project. Lack of statistical information regarding the actual numbers of migrants from the north to the south has made the problem more complex by the type range and frequency of temporary migration. The migrants normally arrive financially handicapped, physically weak and with little hope of employment. They regard their stay as temporary and are thereby willing to accept almost any conditions of housing and social isolation no matter how bad. Some fake physical disability and resort to begging; some profess to be witch-doctors; and others resort to violent forms of crime, immorality and delinquency. Most of them have no accommodation and therefore sleep in shop balconies, open spaces and under trees. Some also erect shanties and temporary buildings with temporary materials, creating problems of squatter and slums. Others who are lucky to have relations and friends in the towns, share the same already overcrowded accommodation. This customary practice creates very high occupancy rates and liability to the embarrassment of both the house owner and the tenant. This results in open verandahs being enclosed to provide extra rooms and extra rent. This situation obviously worsens the housing condition and creates health problems.

No figures are available for house building throughout Ghana. When the 1960 Census has been processed, figures will be made available for the number of houses built between 1948 - 1960. The bulk of houses are built by private enterprise and only a relatively small number are built by Government and Government agencies. The figures given below relate to the Municipalities where statistics on house building are recorded. The totals are slightly below the actual figures as a certain amount of unrecorded unauthorized development takes place.

	ACCRA		KUMASI		SEKONDI/ TAKORADI		CAPE COAST	
	A	B	A	B	A	B	A	B
1955	860	278	371	23	263	35	61	22
1956	1,110	289	351	13	217	58	86	51
1957	848	83	399	45	175	71	133	57
1958	1,162	196	319	94	174	82	164	40
1959	882	230	394	69	149	94	132	58
1960	404	262	194	37	110	17	33	25
January - June								

A - Building and Development Permits issued
B - Buildings Completed.

The above totals include houses built throughout Ghana by the "Ghana Housing Corporation" which were as follows:-

1956 - 59 inclusive) Low Cost	210
) High Cost	179
1959 - 60 inclusive) Low Cost	761
) High Cost	156

The total number of houses or dwellings built at Tema were as follows:-

<u>1955</u>	<u>1956</u>	<u>1957</u>	<u>1958</u>	<u>1959</u>	<u>1960</u>
12	31	739	493	440	2,034

The figures above exclude private development at Achaiman.

In a town planning re-development exercise that the author is working on in Sekondi, survey data revealed that in the slum areas, occupancy rate in some cases was about 6.5 persons per room of about 120 sq. feet. In an area of about 50 acres, the following were the condition of the building:-

No. of buildings in good condition	- 95
No. of buildings in fair condition	- 77
No. of buildings in poor condition	- 91
Temporary structures	- 127

In this area, the average number of rooms per a two-storey house was about 12, and in the single storey about 6. Allowing for habitation in the temporary structures, the total number of estimated rooms was about 3,000. And the estimated total number of people occupying them about 10,500. That is 210 persons per acre. The standards laid down by the Planning Authority in the urban areas (Municipalities) are:-

Room occupancy (120 sq. feet per room).	
2.5 persons per room.	
High density	60 rooms/acre
Medium density	40 rooms/acre
Low density	20 rooms/acre
Average net residential density.	
100 - 120 persons per acre.	

Migration follows industry and the line of least resistance. The Volta Project is an industrial undertaking. Industrial undertakings invariably go with and tend to increase urbanization. This means that if the Project is carried out, all these serious problems already facing the Government and particularly Planning Authorities could be made more acute unless effective and drastic measures are taken.

To deal with the problems evoked above, the following measures are suggested for examination:-

- (1) Agricultural Revolution whereby the following facets could be introduced:
 - (a) Mechanization of Agriculture;
 - (b) Large scale farming - with a bill stipulating the minimum sizes of farms;
 - (c) Co-operative farming, marketing and distribution (Private enterprise);
 - (d) Allied agricultural industries must be encouraged in villages;
 - (e) Government owned farms (state enterprise);
 - (f) Location or siting of Agricultural Advice Centres within convenient catchment areas;
 - (g) Teaching and practice of agriculture should be given a prominent place in Elementary School curricula.

Already faculties of agriculture exist in the universities.

- (2) The Government Planning Authority must encourage the creation of Town Planning Committees in the other non-Municipal areas where development is growing rapidly. Similarly, Rural or Village Planning Committees must be encouraged. A more efficient machinery should be set up to arrest and control unauthorized development. A progressive law to this effect must be enacted whereby offenders will be liable to very heavy fines.

In the Urban Areas, the application and enforcement of the Building Regulations, particularly powers of demolishing unauthorized buildings, must be vested in the Town Planning Authority and not the Municipal Councils. In other words the authority must rest with the technical Civil Servants and not with Councillors.

Where numbers from a given tribal group are substantial, complex patterns of relationships, both cultural and economic, often develop within the urban areas. In Kumasi, for example the predominantly Moslem migrants from Upper Volta, Northern Ghana, and the French Territories tend to agglomerate in their own self-made "neighbourhoods" known as ZONGO. Apart from their religious beliefs, they have customs and traditions sharply different from the indigenous Ashantis. Some of these communities, until recently, used to have their own political parties with their own institutions and social affiliations. They have representation, by virtue of their numbers, both on Local Authority Councils and on Central Government bodies.

Some of these tribal groups become so strong that in some cases rivalry and competition result in open clashes. All these attendant conditions in urbanization could be aggravated and made worse by an industrial exercise such as the Volta River Project, particularly as its labour is drawn from anywhere as long as they are available and capable.

In Takoradi, there exists a strong body of multi-tribal gangs known locally as "PILOT BOYS". Their method of living and philosophy of life is modelled along the pattern of the gangsters in New York and Chicago. They engage in illicit trading, assault people indiscriminately, and resort to various forms of violence. In his book - "A Social Survey of Sekondi/Takoradi" - Professor K.A. Busia estimates that about 90% of this gang are non-locals who have come from all parts of the country into Takoradi. This organization thrives at sea-ports and trades in illicit hemp. With the opening and operation of Tema harbour, another fertile field has been created for the "Pilot Boys." This social problem therefore is now being "transferred" to Tema, which is Ghana's youngest urban area.

The strength of rural connexions and traditional ties also brings in its trail social repercussions. Some rural parents and dependants live substantially on cash remittances from urban migrants, especially in cases where the father works in town some miles away from the rest of the family. These temporary migrants often suffer from social isolation, psychological insecurity and economic frustration. This leads to a high incidence of immorality, crime and delinquency. The initial social forces therefore maintaining these original tribal and family ties are very strong. As time goes on, there is a split of loyalty between the "urban town" and the "rural village." The social effect of this on the urban area is that few people own and recognize allegiance to the aggregate of the community in which they live. The absence of this loyalty and devotion to work, and the community encourages bribery and corruption, which has been noticeable remarkably in the urban towns recently. There are evidences of commissions appointed by the Government to look into such problems. There are evidences of speeches from very high Governmental level aimed at uprooting the practice from the society.

The nature of the Volta River Project, being of national significance, calls upon every citizen to contribute his quota in one way or the other, both moral and otherwise, towards its successful operation. But if the majority of the people

do not owe and possess that allegiance to citizenship and the nation, if they do not possess that loyalty to state and a sense of responsibility, then serious consequences, at present unforeseen, might result.

Another social factor which tends to affect the urban structure is that wage earning and economic demands of urban life tend to subject the relationships between town and village to great stresses. The new comer in the urban town tends to develop new ideas and new values. He begins to owe allegiance to new social groupings in the urban area. An example is the "PILOT BOY" who eventually loses contact with his rural relations, but seeks guarantee and security in his newly founded gangs. These are all new values that have been acquired in the process of urbanization, and they could be marshalled in a positive manner towards a better society instead of the present form of gangsterism.

The Volta River Project envisages an extensive scheme for the training of African staff and technicians who will eventually man the various departments of the Project. Though the exact number is not known, it is estimated that large proportions of Ghanaian technicians and professional men return to Ghana every year from overseas universities. They arrive with new ideas - both western and eastern - generating new attitudes and new demands, which in turn create new social order and social relations. Already Ghanaian students are pouring into Eastern universities in greater numbers than ever before. For the first time in the history of Ghana Government, a new Ministry for Industries has been created. Emphasis of Government policy is now on industrialization. The pattern of society is rapidly changing, and the Volta Project could act as a catalyst in speeding up the reaction of the new order upon the old. For example, today, the African thinks in terms of science and technology, and therefore assesses distance in terms of minutes (by foot or car) as against miles. Today "westernized" African thinks in terms of his family as against the previous way of thinking in terms of relations and tribe.

Traditionalism and modernism are already creating social stratification in the urban areas. These types of social philosophy, unfortunately, are a barrier to social development. Some classes of the society adhere strictly to traditional form of clothing, culture, customs and habit; while others, especially those who have been to overseas universities, try to create a "via media", or adopt the western culture. This is evident at state dinners when some people put on "kente cloths" (native robes), while others put on Dinner Jackets. In marriages, one man marries two ladies - one

in the European way (official) and the other in the native customary way. The Volta Project could result in an immediate worsening of such conditions. If these factors are not looked into before the Project comes into full operation, results might be clashing.

Time was when high status in the tribal society was greatly respected as such, but under the present urban conditions, achieved status in terms of professional and political skills tend more to predominate. Thus, under this changing pattern, the politician, doctor and engineer are more respected, and have a more prominent place in the society. The political trend is directed towards a Socialist school of thought. This has repercussions with far reaching consequences on the Volta Project.

Other variable factors that the Project may have on urban areas are the degree of ethnic groupings within urban centres, and the continuance of traditional authority patterns. The wide differences in the social milieu of some urban folk are interesting. For example, the outlook of a man just arrived from an overseas university is widely different from a man just migrated into Accra from a far off village. This situation creates a modification of cultural and social values in urban life, and the Volta Project, with its major overseas training scheme, could worsen the situation, because the Ghanaian with an overseas training, working with expatriates, faces two separate cultural loyalties - loyalty to his own which is the oldest, and loyalty to the newly acquired culture from the European.

ECONOMIC EFFECTS

The economy of Ghana has been changing rapidly since 1939. The export trade has increased both in value and in volume, especially cocoa which dominates the export market. The prolonged cocoa boom has enabled reserves of various kinds totalling not far short of £200 million to be built up. Recent Government policies are all designed to increase production and to create a favourable balance of trade. But economies from these sectors are subject to uncertainties of world price and fluctuations. On the other hand, the economy of the Volta Project is more stable and offers a more steady wage employment, offering therefore more attraction to labour, capital and enterprise. The Government of the United States of America has decided to give £13 million towards the Volta Project. The contract for the construction of the dam at Akosombo and other ancillary works has been awarded to a consortium of Italian firms, who have their engineers now on the site. Tema harbour is in operation now. A healthy nucleus of the Project has already started.

All these are attractions which create a magnetic force in the urban economy. Large numbers of technicians, engineers and experts are expected to pour into the country to assist in the construction. Part of their salaries would be spent in the country, but a greater proportion would be sent overseas to their families and dependants. Money in circulation therefore would be affected.

Addressing members of Parliament on Tuesday 21st February, 1961, President Nkrumah said that the £70½ million needed for the Project would come from different sources. He said the Government had completed preliminary discussions with the International Bank for Reconstruction and Development, Development Loan Fund of the United States of America, the United Kingdom Government, and the Export - Import Bank of Washington for loans amounting to £30 million sterling. The President of the United States of America was also approached to provide an additional loan of about £10 million sterling for the national transmission system. It was proposed to provide up to a maximum of £35 million from Ghana's own development fund as an equity investment in the scheme. The President said the Project provided for a return on the money invested in such a way that in addition to the scheme being fully self-liquidating over the period of its estimated life of 50 years, the financial returns should suffice to cover from its own earnings and future power development which might be required by Ghana. Some of the effects of the criteria adopted are summed up in President Nkrumah's words "I am looking forward to the day, and it should not be far distant, when I shall be able to abolish personal income tax in Ghana and increase wages with an effective purchasing power" (President's speech to the National Assembly on 21st February, 1961). Generally, the scheme will provide an increase in Ghana's foreign exchange earnings.

Tema port is to enclose an area of 500 acres of water, with 10 deep-water berths and three oil berths. Takoradi harbour on the other hand encloses an area of 220 acres of water, with 6 berths and one oil berth. Tema is to handle a staple export material produced continuously for 24 hours of the day (aluminium). Takoradi handles an unstaple export material, produced seasonally (cocoa). Tema is a new township with more centralized and better opportunities for industrial growth than Takoradi. The influence and probable effect is that Tema could be wealthier, more prosperous, and with a more steady volume of export trade. The economic and trade status of Takoradi harbour will be adversely affected, because of the differences in the economy and income of the two ports. This effect may ultimately condition the season

and volume of employment, the wage structure, as well as the number and kind of people employed. Tema could attract more labour and therefore increase the incidence of migration from other urban areas. This wave of skilled and semi-skilled migration may create problems of skilled labour shortage in Takoradi. On the other hand, there could be problems of redundancy in Tema during periods of low production, particularly after the period of construction. Furthermore, other harbour uses as well as related industries (e.g. timber) will be affected too, especially with the development of inland waterways on the River Volta because timber transport by rail and road to Takoradi will be reduced by this new water transportation.

Another observation is that the state of Ghanaian employment has been increased due to improved techniques, improved skills, higher production, and the Government's policy of "Africanization". The Volta Project means more and better organized techniques, and still higher production in terms of national unit per production. There will therefore be opportunities for more employment. More employment means more people and more housing. More housing with more facilities such as electricity, water and sewage, means higher rents. The higher rents in turn determine the economics of housing, the type of houses and the kind of layout. Economic physical planning is therefore affected by these conditions.

Ghana has increased and still is increasing its rate of mechanization in both the agricultural and industrial sectors of the economy. The Workers Brigade are cultivating large tracts of land for agricultural purposes. Until a few weeks ago, the Agricultural Development Corporation and the Industrial Development Corporation were both working hand in hand towards the same end. The tendency has been a development of "large scale" in terms of land as against small farms before. The Volta Project envisages irrigation schemes and agricultural exercises. This tendency of "large-scale" may tend to increase with the Project. This increase could affect the efficient utilization and production of the worth of the land. There will be equal demands on the land from both industry and agriculture. Land values of existing property may be affected. Problems of land valuation and assessment may therefore be created.

The Volta Project offers opportunities for better standard of living. Better standard of living in a country where polygamy is still practised in some sectors, and where birth control is relatively unknown, creates chances of a population increase. This population increase could affect the pattern of population

distribution in the urban areas. At present, about 70% of the total population live in villages with less than 3,000 inhabitants. These figures would be considerably altered in the urban areas by the estimated increase in migration and population.

The smelter township (50,000 population) and Tema new town (75,000 population) will not only increase the number of urban towns but also foster urbanism and urban inter-relationships, especially in transport and communications.

In African communities higher incomes encourage increase in family sizes. The Volta Project promises higher standard of living and higher incomes. Therefore an increase in population could be expected, which unless catered for could create overcrowding, poverty and slum conditions.

LAND USE IMPLICATIONS

This is a study of the overall picture of probable land use relationships, as conditioned by:

- (a) the various components of the Project
- (b) other allied developments of the Project, and
- (c) the socio-economic forces discussed in the earlier pages of this paper.

The existing pattern of accessibility having increased facilities available for the Project, has influence on, and is influenced by, the Volta Project. Tema is joined by rail to Accra and the Shai Hills; the Central Railway line has been extended to join the main Accra - Kumasi line; first class road systems have been constructed; the new bridge over the Volta at Adomi has been completed. All these improvements could have their impact on urban landuses and growth. For example, the new railway line to the mine head near Kumasi could affect its planned development and interrupt communications between the central area of Kumasi and the rapidly expanding suburbs.

The Volta proposals envisage a railway line crossing the main Accra-Kumasi line at a point 5 miles south of Kumasi. This would necessitate the siting of railway sub-station at the same point to handle both bauxite from and to the mines, as well as passengers probably. Transit sheds, sidings and warehouses would have to be constructed. Employees working at the sub-station and their families should be housed near to their place of work. Residential uses therefore develop. To cater for their minimum daily essentials, corner shops appear. A nucleus for a small settlement emerges, depending on Kumasi for its major shopping and services. Certain relationships are therefore set up with near-by urban areas.

Tema port could also have its land use effects on Accra and Takoradi. It is expected that the first four berths of Tema should be able to handle about 800,000 tons of traffic a year. It is therefore intended to transfer the traffic now handled at Accra to Tema port at an early stage of its operation. This involves transfer of port uses such as sheds, warehouses, wholesale, retail trade, offices and other miscellaneous allied uses to Tema. This transfer will obviously upset the pattern of land use relationships which has been built up and been in operation since the first batch of 5 tons of cocoa was exported from the country in the 1890's. The railway goods train from the port at Accra to the transit sheds will cease to operate. The sheds may be put to other uses, which could in turn create new pattern of uses and relationships.

Tema port may be expected to handle exports of 120,000 tons of cocoa, and 30,000 tons of miscellaneous commodities a year, apart from the aluminium products. This means a reduction of port uses and facilities at Takoradi, with a corresponding increase and expansion at Tema. It looks therefore as if the new port at Tema is being used to stab some of the old and well-established uses at Takoradi.

The report on the Project recommends the use of helicopters to speed up communications and health service. This involves the construction of helicopter stations, a relatively new introduction into the urban scene. Their effects would speed up the process of urbanization.

The imports of plant and equipment together with other items such as prefabricated houses, could encourage long-distance transport and haulage services. These services in turn could create new uses or expand certain uses already existing on the main trunk roads. Between points of origin and destination, distinct uses (such as roadside cafes, restaurants, "bed-and-breakfast", and storage and transit warehouses) could develop. These factors of accessibility which come within the wake of urbanization, could have a tremendous impact on land uses both in the urban areas and in other parts of the country.

Industrial operations often have adverse effects on public amenity, health and convenience. The Volta Project heralds Ghana's Industrial Age which, if not efficiently controlled, could create the filth, squalor, disease and poor planning that characterized the Industrial Age in Europe during the 19th Century. These ill-conditions have a tendency of affecting the urban areas. Therefore it is probable that Accra, Takoradi, Kumasi and Koforidua may be most affected in the

event of such a situation arising. Furthermore, industry is one of the least predictable forms of development. A proper survey and analysis of information in a scientific way is essential. The position in Ghana regarding such a scientific investigation is not favourable because information and figures are not always available. Land planning therefore is approached in a non-scientific way, particularly in the urban areas. This situation is likely to be worse if the Volta Project is implemented, because the attractions it carries could encourage other allied and subsidiary uses to develop, especially in the basin of the River Volta. The hydro-electric scheme estimates generation of $\frac{1}{2}$ million kilowatts of electricity. Vast areas of land, about 3,000 sq. miles, are to be flooded. Water and electricity would be cheap, plentiful, and convenient, and therefore could attract other uses and users which need plenty of electricity and water. The Volta itself could offer a source for the discharge of such waste or effluent that may result. The long-term picture could be a location of a string of related industries which are typical of the industrial basins of some of the rivers of the world e.g. Mississippi, Clyde and Tyne.

Glasgow is famous for shipbuilding; Middlesbrough for iron and steel; and Stafford for pottery. Such a concept of urban identification is practically non-existent in Ghana. The Volta Project may offer a basis for the adoption of such a concept, for example, the smelter town could be primarily industry; Tema export and commercial; and Accra, already an administrative capital, developed also for holiday resort due to the existence of certain favourable uses such as good hotels, night-clubs, museum, libraries, university, historic monument and relics, vast stretches of beaches, proximity to Aburi Gardens, and first class shops comparable to any western standards.

The proposed lake (230 miles long) and the fishing facilities that would be provided could have influence on the existing pattern of uses in the fishing communities of Accra, Winnebah, Cape Coast and Takoradi. At Accra, for example, large fishing communities made up of permanent, migrant and seasonal fishermen as well as surfboat workers, are concentrated in the fishing neighbourhoods of Osu and Jamestown. They have a tendency to migrate to places where there are prospects of a good catch, good market, and reasonable cash returns. The Volta Project offers all these advantages. It is therefore possible that urban areas with large concentrations of fishermen will lose them either seasonally or even permanently.

If the latter permanent situation arises, new fishing villages will emerge along the new lake. This situation has already occurred between Elmina and Cape Coast where originally migrant fishermen from Keta area have formed themselves into permanent communities, creating slum conditions and shanties along that stretch of beautiful road and landscape. Furthermore, the present fishing communities at Accra will lose their traditional and original identity. Some of the fishing sheds have to be converted into other uses. Pattern of relationships will therefore be off-set.

Another general effect that the Project may have on the urban areas is that there could be probable growth and expansion of the smaller settlements between Tema and Accra. This tendency of the spread of these "intermediaries" is already happening due to recent improvements and development of roads, railways and efficient bus services between Tema and Accra. The resulting effect could be the creation of a linear conurbation on the littoral, eventually linking up Accra with Tema. If this happens, major landuse problems would arise, for there would be conflicts in the use of land for offices, commerce, industry and housing, not to mention agriculture.

Another landuse effect is that the new town of Tema (with its new buildings fully equipped with services, its modern layout, its organized open spaces, etc.) could function more efficiently with regard to uses than Accra which has no such privileges. This situation, if not challenged by Accra, and good Government policy, could lead to Tema developing more efficiently than Accra, and therefore the latter losing some of its trade and uses to the former.

CONCLUSION

Undoubtedly, the possibilities of the Volta River Project are very great and far-reaching. Many advantages will come out of the exercise. And so are the trails of other attendant problems.

The Report of the Commission on the Volta River Project demonstrates mainly the technical and economic (financial) soundness of the Project. Other equally important problems, such as those revealed in this study, and the effect on Urbanization, have, to the writer's mind, not received adequate treatment. These problems, however, though remote and inter-related in parts, could have profound influence on the success or failure of the machinery of urbanization and the Project. The success of raising finance for the development of other large-scale

schemes in other parts of Africa depends on the outcome of the Volta River Project. There should be adequate scrutiny of the social, economic and landuse implications likely to affect urbanization in Ghana. If these problems are examined, and acceptable and workable solutions found to them, the Volta River Project could herald an industrial era which could support new patterns of living, giving the people real comfort, convenience and amenity.

MISCELLANEOUS INFORMATION
TAKORADI HARBOUR - (GOODS HANDLED)

1.

Year	1949-50	1950-51	1951-52	1952-53	1953-54
Imports (tons)	526,853	622,747	691,647	699,060	714,939
Exports (tons)	1,291,638	1,391,030	1,394,024	1,362,615	1,353,850
Total	1,818,491	2,013,777	2,085,671	2,061,675	2,068,789

Year	1955-56	1956-57	1957-58	1958-59	1959-60
Imports (tons)	885,690	860,854	769,227	865,722	985,817
Exports (tons)	1,363,759	1,662,814	1,654,470	1,598,695	1,871,801
Total	2,249,449	2,523,668	2,423,697	2,464,417	2,857,618

2.

TEMA PORT (Sufferance Port - prior to opening
1st January, 1962).

Month	Total Imports and Exports
August	20,000 tons
September	41,000 "
October	35,000 "
November	51,000 "

3. 10 berths have been completed at Tema port. 8 out of this are in operation, and the 2 are being dredged to handle mainly Volta River Project material.

Berths 1 - 2 to land imports.
Berths 6 - 7 export.
Berths 8 to land import of cement only.
Berths 9 - 10 Volta River Project.

4. Regional Sizes of Ghana

Southern Ghana	23,490 sq. miles
Ashanti and Brong Ahafo	24,560 "
Northern Ghana	30,600 "
Togoland	<u>13,040</u> "
Total	<u>91,690</u>